

CLAIMS:

1. (Previously Amended) An optical instrument, comprising:
an optical element; and
a detector for detecting an impurity concentration in an ambience of a space
surrounding the optical element;
ozone supplying means for supplying ozone into the ambience; and
cleaning means for cleaning the ambience by use of the ozone supplied by
said ozone supplying means, when the impurity concentration detected by said detector is
not less than a predetermined value.

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Previously Amended) An optical instrument according to Claim 1,
further comprising means for putting the ambience in a state purged with a gas
substantially not absorbing light to be propagated through the optical element.

6. (Previously Amended) An optical instrument according to Claim 5,
wherein the gas is nitrogen or helium.

7. (Previously Amended) An optical instrument according to Claim 5, wherein the light comprises deep ultraviolet rays having a wavelength not longer than 200 nm.

8. (Previously Amended) An optical instrument according to Claim 7, wherein the gas comprises a helium gas.

9. (Original) An optical instrument according to Claim 6, wherein the light comprises deep ultraviolet rays having a wavelength of about 248 nm.

10. (Canceled)

11. (Previously Amended) An optical instrument according to Claim 1, further comprising means for holding a mask, an illumination optical system for illuminating a pattern of the mask with light from a light source, and means for holding a wafer to be exposed with the pattern of the mask.

12. (Previously Amended) An optical instrument according to Claim 11, wherein said optical element comprises a reflective element only, or combination of a reflective optical element and a refractive optical element.

13. (Previously Amended) An optical instrument according to Claim 1, wherein said detector has a sensor for detecting a concentration of an organic substance.

14. (Original) An optical instrument according to Claim 13, wherein the concentration of the organic substance is controlled so that the total amount of organic substance in a gas inside said optical instrument becomes not greater than $1 \mu\text{g}/\text{m}^3$.

15. (Original) An optical instrument according to Claim 14, wherein the concentration of the organic substance is controlled so that each concentration of carboxylic acids, aldehydes, esters, phenols, phthalates, phthalic acids, amines, and amides is kept at $0.01 \mu\text{g}/\text{m}^3$ or less.

16. (Previously Amended) A device manufacturing method, comprising the steps of:
exposing a wafer by use of an optical instrument as recited in Claim 11; and
developing the exposed wafer.

17. (Previously Presented) An optical instrument, comprising:
a detector for detecting an impurity concentration in an ambience of a space surrounding an optical element;
oxygen supplying means for supplying oxygen into the ambience; and

cleaning means for cleaning the ambience by projecting light to the oxygen supplied by said oxygen supplying means, to produce ozone or active oxygen, when the impurity concentration detected by said detector is not less than a predetermined value.

18. (Previously Presented) An optical instruction according to Claim 17, further comprising means for holding a mask, an illumination optical system for illuminating a pattern of the mask with light from a light source, and means for holding a wafer to be exposed with the pattern of the mask.

19. (Previously Presented) An optical instrument according to Claim 17, wherein said optical instrument includes a reflective optical element only, as said optical element.

20. (Previously Presented) An optical instrument according to Claim 17, wherein said optical instrument includes, as said optical element, a reflective optical element and a refractive optical element.

21. (Previously Presented) A device manufacturing method, comprising the steps of:

exposing a wafer by use of an optical instrument as recited in Claim 17; and
developing the exposed wafer.

22. (Previously Presented) An optical instrument, comprising:
a detector for detecting an impurity concentration in an ambience of a space surrounding an optical element;
light projecting means for projecting light into the ambience; and
cleaning means for cleaning the ambience by generating a photochemical reaction in the ambience by projecting light thereto using said light projecting means, when the impurity concentration detected by said detector is not less than a predetermined value.

23. (Previously Presented) An optical instrument according to Claim 22, further comprising means for holding a mask, an illumination optical system for illuminating a pattern of the mask with light from a light source, and means for holding a wafer to be exposed with the pattern of the mask.

24. (Previously Presented) An optical instrument according to Claim 22, wherein said optical instrument includes a reflective optical element only, as said optical element.

25. (Previously Presented) An optical instrument according to Claim 22, wherein said optical instrument includes, as said optical element, a reflective optical element and a refractive optical element.

26. (Previously Presented) A device manufacturing method, comprising the steps of:

exposing a wafer by use of an optical instrument as recited in Claim 22; and
developing the exposed wafer.

27. (Previously Presented) An optical instrument, comprising:

a detector for detecting an impurity concentration in an ambience of a space surrounding an optical element; and

cleaning means arranged to generate a photochemical reaction by use of a photo-catalyst, thereby to clean the ambience, when the impurity concentration detected by said detector is not less than a predetermined value.

28. (Previously Presented) An optical instrument according to Claim 27, further comprising means for holding a mask, an illumination optical system for illuminating a pattern of the mask with light from a light source, and means for holding a wafer to be exposed with the pattern of the mask.

29. (Previously Presented) An optical instrument according to Claim 27, wherein said optical instrument includes a reflective optical element only, as said optical element.

30. (Previously Presented) An optical instrument according to Claim 27, wherein said optical instrument includes, as said optical element, a reflective optical element and a refractive optical element.

31. (Previously Presented) A device manufacturing method, comprising the steps of:

exposing a wafer by use of an optical instrument as recited in Claim 27; and
developing the exposed wafer.